Pioneers 6 Through 9 Support

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This article reports on the activities of DSN Operations in support of the Pioneer 6 through 9 Missions from 16 December 1979 through 31 May 1980.

I. Introduction

The information contained in this article covers the cruise phases of Pioneer 6 through 9 operations and the continuing efforts of the Deep Space Network in support of Pioneer Mission Operations.

II. Mission Operations and Status

A. Pioneer 6

Pioneer 6 was not tracked during the month of December. On 18 January 1980 almost a year to the day since the last Pioneer-6 support, the spacecraft was supported by DSS 43 (Ballima, Australia). During this support no downlink from the spacecraft could be found. After an extensive study it was determined that possibly the spacecraft had turned off due to an undervoltage condition. The decision was made to attempt to turn the spacecraft back on by transmitting a sequence of commands in the blind, utilizing the high power transmitter at DSS 43. On 15 February 1980 a downlink was acquired from the Pioneer-6 spacecraft. Again on 21 February a downlink was acquired from the spacecraft. However, on both days the signal was weak, as the spacecraft was entering superior conjunction. Because the data obtained was not of good quality, it is difficult to determine the true status of the spacecraft.

B. Pioneers 7 through 9

During the month of December there were no scheduled tracks for these spacecraft. In January 1980 scheduled tracking support commenced on a regular basis. Data received from all three spacecraft indicate that they are healthy and functioning nominally. Pioneer 8 continues to require the 100 kW transmitter from 64-m stations due to the spacecraft's degraded receiver.

III. Summary

At this time, Pioneer 6 through 9 are in cruise mode and spacecraft appear to be operating nominally. Tracking coverage from November 1979 through May 1980 is shown in Table 1.

Table 1. Pioneers 6 through 9 tracking coverage

Month	Pioneer Spacecraft	Station type	Number of tracks	Tracking time (hrs, mins)
January	6	64 m	1	00:46
1980	7	64 m	1	03:45
	8	64 m	4	11:36
	9	64 m	1	03:05
February	6	64 m	3	10:30
1980	7	64 m	2	5:57
	8	64 m	3	9:17
	9	64 m	3	12:08
March	6	64 m	1	6:20
1980	7	64 m	1	5:42
	8	64 m	4	19:00
	9	64 m	4	14:54
April	7	64 m	1	5:30
1980	8	64 m	2	10:52
	9	64 m	5	26:33
May	8	64 m	1	3:57
1980	9	64 m	6	41:11